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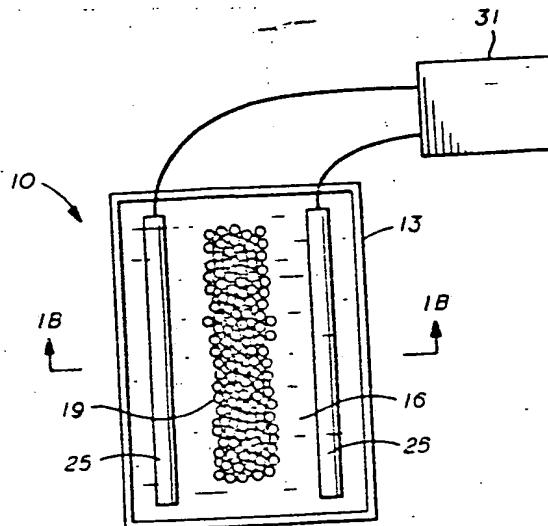
БЮРО
НАУЧНО-ЛАБОРАТОРНАЯ
БИБЛИОТЕКА
БАЙЛОР УНИВЕРСИТЕТ

(54) Title: METHOD OF AND APPARATUS FOR CELL PORATION AND CELL FUSION USING RADIOFREQUENCY ELECTRICAL PULSES

(57) Abstract

Disclosed are an apparatus and a method for the poration and fusion of cells using high-power radiofrequency electrical pulses. The electrodes of the apparatus can be hand held or part of integrated equipment with special containers for cells. The electrodes, which are positioned equidistant from each other, are attached to a high power function generator. The power function generator can apply a continuous AC electrical field and/or a high-power pulsed radiofrequency electrical field across the electrodes. The alternating electrical field induces cell congregation by the process of dielectrophoresis. The high-power pulsed radiofrequency electrical field porates or fuses the cells.

The method has the ability to porate or fuse biological cells with a very high efficiency. The method can be used to fuse or porate a variety of cells including animal cells, human cells, plant cells, protoplasts, erythrocyte ghosts, liposomes, vesicles, bacteria and yeasts. The method has the unique ability to porate or fuse cells in very small or very large numbers. During the poration or fusions, a variety of chemical agents including DNA, RNA, antibodies, proteins, drugs, molecular probes, hormones, growth factors, enzymes, organic chemicals and inorganic chemicals can be introduced into these cells. The method can also be used to produce new biological species, to make hybridoma cells which produce animal or human monoclonal antibodies and to insert therapeutic genes into human cells which can be transplanted back into the human body to cure genetic diseases.



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INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 88/03457

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)¹

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC⁴: C 12 N 15/00; C 12 N 13/00

II. FIELDS SEARCHED

Minimum Documentation Searched⁷

Classification System ¹	Classification Symbols
IPC ⁴	C 12 N

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched⁸

III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹

Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	EP, A, 0128567 (KERNFORSCHUNGSANLAGE JÜLICH GmbH) 19 December 1984, see claims --	1-4, 11
A	US, A, 4578168 (G.A. NOFMANN) 25 March 1986, see claims; column 5 --	1
A	US, A, 3059359 (J.H. HELLER) 25 June 1963, see claims ----	1, 5

* Special categories of cited documents:¹⁰

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IV. CERTIFICATION

Date of the Actual Completion of the International Search

30th May 1989

Date of Mailing of this International Search Report

19 JUN 1989

International Searching Authority

EUROPEAN PATENT OFFICE

Signature of Authorized Officer

 WILHELM P. G. VÄTHER PITTEN

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ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. **102000000000**

US 8803457
SA 25321

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 13/06/89. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP-A- 0128567	19-12-84	DE-A, C	3321226	13-12-84
		JP-A-	60009490	18-01-85
US-A- 4578168	25-03-86	JP-A-	61037090	21-02-86
US-A- 3059359		None		

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